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Executive Director

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

July 7, 1997

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, NW, Room 222  
Washington, D.C. 20554

Re: Federal-State Joint Board on Universal Service: CC Docket No. 96-45

Dear Mr. Caton:

On July 7, 1997, Bill Schmid, Executive Director of the Florida Distance Learning Network (FDLN) and Director of the Florida Information Resource Network (FIRN) under the Florida Department of Education, Melinda Crowley of the Florida Distance Learning Network, and Bridget Duff of the Florida Public Service Commission met with Irene Flannery and Kim Parker of the Universal Service Branch to discuss issues related to the eligibility of existing statewide telecommunications networks as consortia under the FCC's Universal Service Order. The discussion focused on the FIRN's eligibility as a consortium for purposes of obtaining funding for network services on behalf of Florida's eligible schools and libraries.

This notice is being filed today pursuant to Section 1.1206(b)(2) of the Commission's rules. If you have any questions concerning this filing, please do not hesitate to contact me.

Sincerely,

Bill Schmid  
Executive Director, FDLN/FIRN

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## FLORIDA EDUCATORS' GATEWAY TO THE WORLD

Since its beginning as an administrative data transport facility, FIRN has grown into a full service network supporting students, teachers, and administrators. The Florida Information Resource Network, a nationally recognized leader in educational networking, provides solutions to networking and computer issues for Florida's:

- 67 School Districts
- 28 Community Colleges
- 10 State Universities
- 4 Lab Schools
- 3 Consortia Training Labs
- 58 Community College Libraries

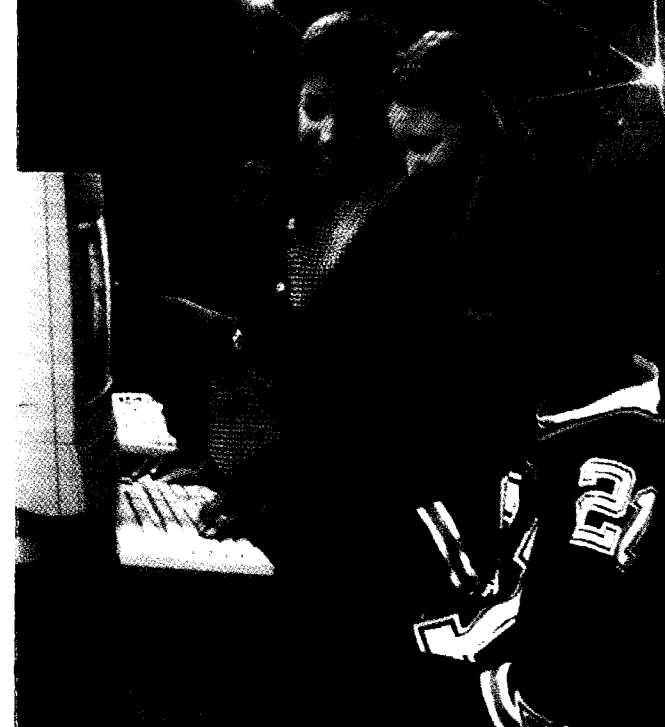
Through FIRN, networking technology is literally at the fingertips of every educator in Florida. Over 50,000 educators use the network on a regular basis and over 1,000 new accounts are created every month. For more information about FIRN, contact Bill Schmid, Director, at 904/487-0911.

FIRN LOCAL DIAL-UP NUMBERS

Arcadia 941/993-4725  
Avon Park 941/452-0050  
Belle Glade 407/992-1688  
Boca Raton 407/338-3805  
Brooksville 352/544-5121  
Chipley 904/638-6040  
Dade City 352/524-2900  
DeLand 904/736-5365  
Ft. Lauderdale 954/467-4690  
Ft. Myers 941/433-6560  
Ft. Pierce 561/467-5550  
Ft. Walton 904/833-9300  
Gainesville 352/392-5362  
Immokalee 941/657-5088  
Inverness 352/726-0814  
Jacksonville 904/646-2992  
Key West 305/293-6350  
Kissimmee 407/846-5266  
Lake City 904/758-5790  
Lakeland 941/297-3100  
Land O'Lakes 813/929-2900  
Largo (Pinellas) 813/588-4002  
Madison 904/973-8184  
Marianna 904/482-1202  
Miami 305/229-3280  
Mayo 904/294-2856  
Naples 941/775-5272  
New Port Richey 813/836-2900  
Ocala 352/620-3304  
Orlando 407/317-7650  
Palatka 904/329-2552  
Palm Beach 561/433-3682  
Panama City 904/747-5780  
Pensacola 904/494-7160  
Perry 904/838-2580  
Plant City 941/499-2638  
Port Charlotte 941/255-0630  
Port St. Joe 904/229-9476  
Rockledge 407/639-1790  
Sanford 407/328-3911  
Sarasota 941/361-6666  
St. Augustine 904/823-4687  
Stuart 407/223-2609  
Tallahassee 904/488-0650  
Tampa 813/974-3890  
Tavares 352/742-6440  
Vero Beach 407/778-7258  
Winter Haven 941/297-3100  
Toll-free 800/468-6891

For more information contact:  
FIRN helpdesk at 800/749-3476

## FLORIDA INFORMATION RESOURCE NETWORK





# The Florida Information Resource Network supports:

## Teachers

- Free Internet access
- E-mail accounts (over 40,000 active accounts generate more than 100,000 messages per day)
- Group conferencing with educators throughout the state
- 24-hour access to network services from home
- Network access for Florida teachers who are traveling out of state
- Online access to library resources at all universities and community colleges, as well as the State Library
- Web access to SUNLINK, Florida's K-12 public school union catalog
- Distance learning opportunities for certification and graduate courses
- Access to state supported databases such as technology lesson plans, arts resources, environmental education, and catalogs of materials

## Students

- Access to instructional resources such as the Encyclopedia Britannica and American Cybercasting
- Repository for student-created Web pages
- Classroom accounts for student access to the Internet
- Hospital/Homebound programs available in many districts
- Peer-to-peer tutoring through electronic chat

## Administrators

Transmissions for FY95/96:

- 90 million student, staff and finance records
- 2,696,574 ACT/SAT test scores
- 374,988 FASTER transcripts
- Over 100,000 student financial aid needs analysis records

Applications:

- Provides access to Regional Data Centers, SAMAS, and other state systems
- Serves as a network backup to other state agencies

## Technical Support

- 10 FIRN Technical Education Consultants (FIRNTECs) strategically located around the state provide in-service training
- 6 grant positions support the educational consortia
- Special support for small districts

- Helpdesk support available  
8:00 A.M.-11:00 P.M. M/T/W/F  
8:00 A.M.-8:00 P.M. Thursday  
9:00 A.M.-6:00 P.M. Sat/Sun  
Phone: 800/749-3476  
Fax: 904/922-1359  
FIRNMAIL: helpdesk



FLORIDA DEPARTMENT  
OF EDUCATION  
December 1996

*Dear FIRN Patron:*

*Another year has passed and I am amazed at how the network has transformed again! Last year, FIRN completed a major network upgrade, but there was little time to sit back and enjoy the fruits of our labors. In February, FIRN took advantage of the Division of Management Services (DMS) statewide Frame Relay contract with Intermedia Communications, Inc. by converting the network backbone to Frame Relay. FIRN now offers Frame Relay "local loop" connectivity to all eligible institutions. One of the major advantages of Frame Relay technology is cost. Schools can now connect to FIRN and/or Internet at very affordable rates. In fact, the rates may be some of the best in the nation.*

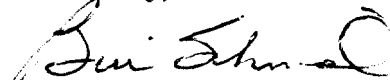
*Working closely with DMS, FIRN assisted in the Request For Proposal (RFP) process to secure a statewide Internet Provider. A contract was awarded this past spring to Bell South to provide Gateway service to the Internet. FIRN, serving as public education's Internet provider, purchased two 10Mbps Gateways to the Internet under this contract. FIRN is currently routing most of public education's Internet traffic through the two gateways. Basically, FIRN serves as an Internet broker, providing a considerable savings to all education and library entities.*

*NetDay '96, a national grass roots effort to wire schools for technology, was held on October 26, 1996. Actually, I view that date as the first day of NetDay which will not end until every school in the state has been wired. A significant number of schools were wired on the 26th, and many school districts continue to have NetDays. An official count has not been established at the time of this writing, but the number appears to be well over 1,000 schools. FIRN is beginning to get connectivity requests from the NetDay schools. Congratulations to all volunteers for making NetDay a success!*

*Thank you for taking time to review this Report which details the advancements made in the past year. Our goal is to continue to provide the best possible access and services for administrators, teachers and students.*

*I welcome your comments. Please email them to [schmidb@mail.firn.edu](mailto:schmidb@mail.firn.edu)*

*Sincerely,*



*Bill Schmid, Director*

*Florida Information Resource Network*

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## Introduction

**A**bout FIRM: The fundamental goal of the Florida Information Resource Network (FIRM) is to provide Florida's educators with equal access to the computing resources that serve public education. This has been accomplished by connecting universities, community colleges and school districts to a comprehensive data communications network which serves as the Department of Education's (DOE) primary data communications facility.

When FIRM began, the technical problems encountered were the interconnection of mainframes, and the connection of terminals and mini-computers to mainframes. The most prevalent Wide Area Networking (WAN) technologies of the early 1980's were implemented providing basic connectivity. A multitude of software compatibility problems surfaced, with the transmission of data files across the network being a particularly troublesome problem.

FIRM has been able to overcome these early problems and now strives to determine the best ways of taking advantage of technological advances in order to improve network services. Frequently, the preferred connection is to a site's LAN (Local Area Network) rather than to a specific computer, datacom processor or workstation, thus changing basic connectivity requirements.

In recognition of these changes, FIRM now focuses on enhanced interoperability, both in the area of functionality and in the area of useability. Additionally, FIRM devotes attention to extending the resource-sharing capabilities of local LANs to a statewide community of educational system users.

FIRM is an extensive network which operates in two fundamental areas: networking and instructional support. The network is the data communications facility that electronically links all of the state's public education entities to computing resources which serve public education. The instructional support refers to both the development of and access to software that provides support for public education administration, instruction and research.

FIRM has been successful in continuing to stay abreast of the technological advances that have surfaced in recent years. Network staff review and evaluate the functionality of most of these advances. As a result, FIRM may choose to include several of these strategies as part of the network operation.

Over the last few years, FIRM has been able to advance well beyond the original legislative mandate of linking educational facilities for administrative purposes. Now, with the support of the Legislature and public educators, FIRM can proudly boast that educators in Florida:

- have access to information servers throughout the world;
- have an electronic means of receiving standardized test scores;
- are able to make more efficient use of computing and telecommunications resources;
- have bulletin board-like repositories of information provided by other educators within the state;

- can easily receive or send a student transcript electronically;
- have access to a high-speed dial-up facility which provides full-function Internet access;
- can utilize enhanced data transfers with a standardization of file transfer mechanisms;
- are able to make use of applications that build proficiency or offer remediation.

The FIRN Coordinating Council (FCC), is the primary group which provides guidance and advice to FIRN, and assists in making policy decisions. The composition of this group is such that each level of education within the state is represented fairly in matters involving policy, technical decisions and network growth. In addition to the structured membership, the Commissioner serves as the

chair while other DOE staff members serve in ex-officio capacities as appropriate.

### **Annual Report:**

FIRN's Annual Report, Part I of The FIRN Report, is a compilation of the accomplishments of the past calendar year. Typically, this time period extends from the last 2 quarters of one fiscal year through the first 2 quarters of a new fiscal year. The Annual Report also addresses the primary goals of the next calendar year.

### **Strategic Plan:**

FIRN's Strategic Plan, Part II of The FIRN Report, is a moving window of several years' worth of projects and ideas that are to be implemented within FIRN. These represent goals and accomplishments FIRN would like to initiate outside the realm of the pending fiscal year.



## Executive Summary

Since its inception, the Florida Information Resource Network (FIRN) has served as the primary data communications facility for the Department of Education, school districts, community colleges and universities within the state of Florida. Over the years, FIRN's role as an information infrastructure has undergone major changes. While those changes were important, none were as important as the enhanced network upgrade that has been in progress during the last two years. This enhancement has provided faster service, more reliable connectivity and a vastly broader base of instructional resources available from sources throughout the world.

The network upgrade improved Florida's telecommunications infrastructure, greatly enhanced the support of statewide educational and instructional initiatives, and supports cost effective individual LAN connections to new network backbone router services.

Having completed the upgrade, FIRN can now focus on supporting school districts,

community colleges and universities as they migrate their infrastructures to take advantage of common network services. The upgraded network supports Florida educators in their quest to find and utilize a variety of educational resources with access to the Internet through FIRN.

A vast array of materials on World Wide Web (WWW) servers, gopher clients, electronic mail and more, all are a part of the services included for FIRN patrons. This year more than any other, FIRN has served as education's Internet Service Provider (ISP), saving thousands of dollars for school districts, community colleges and universities across the state. Included with this was the purchase of access to several leased online products including Encyclopedia Britannica and American Cybercasting.

FIRN has made great strides this year in becoming a more comprehensive support agent for all educational entities within the state of Florida.



## Annual Report

### **Funding:**

Funding for the Florida Information Resource Network is provided annually by general revenue appropriations from the State Legislature. This funding is managed by the Department of Education in accordance with budgets approved by the FIRN Coordinating Council. Each year a large portion of the FIRN budget is apportioned to school districts, community colleges and universities in support of local data processing projects, resource sharing and instructional initiatives. The remaining portion is used in support of other FIRN activities, such as network hardware/software acquisitions and maintenance, staffing, and the design, development and implementation of instructional support projects which enhance education.

Frequently, FIRN funds are provided to assist consortium efforts in offering data center services for student, staff and financial information systems. Similarly, user groups which have been formed based upon the usage of a common type of hardware or software have received funding assistance from FIRN. The Northeast Florida Educational Consortium (NEFEC), the Gateway Educational Computing Consortium (GECC), the Unisys Users Group, the Heartland Consortium and the AS/400 Consortium are a few examples. By pooling resources and combining efforts, these cooperating districts are able to provide more effective administrative data processing support to their participating school districts, and more timely and accurate data to the Department of Education.

FIRN provides funds annually to State University System regional data centers and school districts which house a large collection of FIRN's network equipment. This funding provides for staff, hardware and software to assist with FIRN's overall networking mission. Remote staff are used to maintain communications facilities (circuits, front-end processors, etc.) housed outside the FIRN office. In addition, these sites are reimbursed for all money spent on behalf of FIRN for costs including telephone circuits and data communications equipment.

FIRN also provides funding for auxiliary FIRN staff housed at school district and community college sites. These remote staff help foster the successful use of FIRN by providing technical assistance and training for the FIRN user community, primarily teachers. Known as FIRN Technical Education Consultants (FIRNTEC) these full time staff serve as training coordinators and consultants who provide assistance in the use of FIRN.

The following list shows the annual appropriation for FIRN over the last five years:

<b>1992-93</b>	<b>\$5,311,705</b>
<b>1993-94</b>	<b>\$5,311,705</b>
<b>1994-95</b>	<b>\$5,939,258</b>
<b>1995-96</b>	<b>\$5,959,258</b>
<b>1996-97</b>	<b>\$5,966,473*</b>

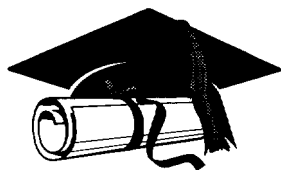
\* FIRN also manages \$3.4 million as flow through for the Community College Data Base Project.

## **A**ccomplishments:

FIRN's primary mission is to provide electronic pathways and procedures enabling participants to utilize computing resources located in public educational data centers throughout Florida. Also, by way of FIRN's Intranet, educators throughout the state are provided access to the global computing resources that are accessible to public education in Florida.

FIRN was involved in a number of major projects this year. Provided below is a condensed listing of developments and accomplishments for several new and ongoing projects at FIRN.

FIRN continues to operate and maintain the Florida Automated System for Transferring Educational Records (FASTER), the electronic system for exchanging student transcripts between Florida's 67 school districts, 28 community colleges and 10 universities. Annually, more than 400,000 transcripts are exchanged through this system. To date, 100% of university students, 92% of school district students, and 85% of community college students attend institutions that are participating in the exchange of high school transcripts. Postsecondary to postsecondary transfers include 94% of university enrollments and 90% of community college enrollments. Interdistrict electronic records transfer currently involves 59 of the 67 school districts, enrolling 94% of Florida's PK-12 population.



Florida school districts, community colleges, and universities also are able to exchange transcripts with out-of-state

institutions through FASTER's interface to the emerging national and international electronic transfer system SPEEDE/ExPRESS.

As an adjunct to the FASTER system, FIRN has developed the Florida Collegiate Admissions Application system. Using this system, students can use their personal computers to make admissions applications to any of the original nine state universities and to six of Florida's public community colleges. This system went into production on September 9, 1996, and is currently available to anyone with an IBM compatible PC (386 or better), a printer, modem, and phone line. The first electronic applications were sent shortly after 12:00 a.m. on that date! The applications are delivered to community colleges and universities using existing FASTER methodologies. By the end of this fiscal year, a version of this system will be operational from the WWW server so that anyone with access to the web will be able to take advantage of the online application system.

FIRN has taken advantage of the Division of Management Services' (DMS) state contract to select a new Internet Service Provider (ISP). Using FIRN's new backbone and this contract, educational sites will no longer have to pay membership fees, resulting in a savings of thousands of dollars.

Numerous times throughout the year, FIRN played a significant role in various educational and technological conferences in the state which were widely attended by government and educational entities. These include the Florida Educational Technology Conference, Government in Technology, and TelEd (a national conference held in Florida the past two years) where FIRN installed and supported an Internet connection for attendees to stay in touch with their classroom or office

while in attendance at the conference. FIRN has also been asked to serve as the Internet Service Provider for the Governor's Educational Summit in January.

Using new technology available from various phone companies, FIRN replaced expensive, point-to-point leased lines with Frame Relay lines savings hundreds of thousands of dollars.

One of the many significant accomplishments of the network was the de-implementation of the 15 year old Tymnet network. This project included reconnecting all 58 community college library sites to FIRN's TCP/IP network. In addition to the library sites, FIRN's network staff provided new connections to numerous school districts and college campus sites. Efforts to make more direct TCP connections will continue throughout the coming year.

FIRN has completed the Course Data Base project for the Division of Public Schools (DPS). Originally conceived as a mainframe data base, the final product was delivered as a Hypertext application on the World Wide Web, accessible from the Department of Education's Home Page. Under the original concept, only headquarters staff at Florida school districts would have had access to the on-line data on course frameworks, outcomes, and standards. However, now that the application is available over the Internet, any teacher in Florida with a FIRN account can browse the DPS curriculum frameworks.

This Internet solution also solved a data update problem. FIRN, working with DPS curriculum staff, standardized word processing files which contain master copies of the curriculum information. When curriculum information changes, DPS staff make those changes to the word processing

files (the same way they have always made such changes). Then, DPS staff run procedures, supplied by FIRN, to convert the wordprocessing files into Hypertext files that are then posted to the Internet. Thus, with a minimum of disruption to the day-to-day activities of the staff that manage curriculum information, their information has now been made available to every curriculum planner and teacher in the state.

FIRN has helped Hillsborough County in the implementation of their School to Work program. School to Work is a comprehensive system of school and work related experiences which assists their students in meeting the challenges of the present and future workforce.

FIRN served as the state coordinator for NetDay '96. FIRN staff participated in this nationwide effort to connect every Florida school to the Internet by providing technical skills to install and test the wiring requirements in two schools in Hamilton County.

This year, FIRN completed the conversion of its low-speed, dial-up facilities to the high-speed 28.8 Kbps enhanced configuration, enabling PPP (graphical) access.

FIRN continues to assist the DOE Auditors in maintaining programs to assist in the public schools auditing process through the use of the DOE Information Data Base.

TCP/IP routing allows for multiple connections to various hosts that are, in most cases, not very direct and inappropriate for certain applications. Access to two such applications was re-engineered using "direct route" strategy where specific data paths to the target host were established as static routes.

Using this, and other processes, service improvements were accomplished and the foundation laid for continued network tuning.

In its effort to make departmental PC data base resources available through the network, FIRN has maintained the following catalogs of information in the FIRN Resource Data Base:

FREE for Teachers Environmental Education resources

Catalog of Technical Assistance Materials from the DOE Division of Public Schools

Florida Arts Resources Clearinghouse

Technology 'Nformation for Teachers Lesson Plans

Florida Tech Prep Materials Clearinghouse

Food and Nutrition Resource Center Catalog

Adult Literacy and Learning Data Base

Ideas and Strategies for Schools

Over the last year, these nine data bases have been accessed over 11,300 times for a total of 730 user contact hours.

With the completion of the two-year effort to implement the Division of Community Colleges Integrated Data Base, FIRN's contractor (Information Systems of Florida) has been assisting the Division with the programming leading up to the loading of the first survey of data into the data base. The data base in Tallahassee is now ready to receive this initial data load.

Many additions and enhancements to the FIRN Internet Server were completed this year making the FIRN Home Page a uniquely reliable source for easily accessible instructional sites. These additions included links to Encyclopedia Britannica Online (BOL) and American Cybercast Educational

Structures (ACC). Both BOL and ACC enable teachers and students to access full-text documents, periodicals, journals, lesson plans and encyclopedia volumes online. FIRN also provided access to SunLink and the alternate site for the Florida Supreme Court Information server. The FIRN Home Page had over 200,000 hits ~~\_\_\_\_\_~~ weekly.

Disk space is provided on the FIRN Internet server for approved non-profit school-related organizations like FACE, FAME, FAEDS, the Florida School Boards Association and numerous public schools and community colleges. Each site creates, designs and maintains their own Home Page on FIRN's server instead of having to purchase hardware and software of their own. The Department of Education and the Division of Community Colleges also have space on FIRN's server.

This past year, FIRN was able to provide access to a point and click e-mail system via our POP (Post Office Protocol) server which receives and stores mail temporarily. Users have the ability to compose and queue messages for subsequent delivery as well as download new messages directly to their PCS. POPmail minimized connect time to the FIRN dial-ups, thereby freeing the lines for others to access.

The Tallahassee based Helpdesk increased the number of full-time and part-time staff in an effort to meet the needs of users with

questions or queries in a more timely manner. The online Helpdesk receives and responds to



approximately 70 e-mail messages daily and

over 200 phone calls daily. The Helpdesk hours are 8 a.m. to 11 p.m. on weekdays and 9 a.m. to 6 p.m. on weekends, exclusive of recognized state holidays. During the regular Thursday evening maintenance to the FIRN system, Helpdesk closes at 8 p.m.

The ten FIRNTECs (FIRN Technical Education Consultant) housed in school districts, community colleges and universities across the state, made great headway with the train-the-trainer program. This program provides a free two-day training seminar in which participants (classroom teachers) learn the ins and outs of telecommunications, FIRN access, PPP and use of the WWW. Once trained, these "FIRN Contacts" serve as an information resource for the faculty at their own schools. This grassroots approach to technology and FIRN training has become a prevalent factor in helping to meet the increased user base of FIRN and to off-load some of the many questions at the Helpdesk.

**G**oals: FIRN will assist the Florida Community College System in the development and implementation of their integrated student, personnel, financial, and facilities data base.

In cooperation with the Data Base Implementation Task Force (DITF), established by the Florida Legislature, FIRN will assist the community colleges and the Division of Community Colleges in the development and implementation of individual and consortia plans to have data collection and reporting systems ready to go into production on July 1, 1996, and to have local Degree-Audit systems in production by December 1, 1996. FIRN will also conduct the Certification Test for the Community Colleges Integrated Data Base.

FIRN's support of the World Wide Web, FTP and Gopher servers will continue to provide a distributed information delivery system of local material as well as data residing on remote hosts.

Last year's test of wireless technology was a complete success using inside limited distance equipment. A natural extension of this success is to employ the use of wireless technology for external connections to multiple classrooms within a school setting. This strategy can eliminate multiple monthly recurring costs for many school and/or district sites.

FIRN will continue to operate and enhance the FASTER, the electronic transcript system. FIRN will assist school districts and postsecondary schools that have yet to become full participants in the system with the goal of achieving 100% participation. FIRN will continue to maintain the interface between Florida's electronic transcript system and the expanding national/international transcript system SPEEDE/ExPRESS, and develop additional trading partner relationships with school districts, colleges, and universities throughout the United States and Canada.

In an effort to continue to improve service and to save money (by decreasing the number of users accessing our toll-free lines), FIRN will install many additional dial-up sites as well as increase the modem pool at existing dial-up locations.

FIRN will continue to support FIRNMAIL, the e-mail service which is available at no cost for public educators throughout the state. To accommodate exploding e-mail usage, FIRN will investigate the implementation of Lightweight Directory Access Protocol (LDAP). LDAP is a distributed directory

service that operates over TCP/IP and provides access to either proprietary stand-alone directories or X.500-compliant systems. LDAP-based directory service provides a mechanism for clients to find each other as well as TCP/IP network resources at other organizations over the network.

In support of enhanced FIRNMAIL, staff will continue to investigate the use of a graphical user interface which will allow users to receive and create mail messages either connected or not connected to the network, or working off-line. Also, staff will continue to investigate the All-In-1 World Wide Web gateway interface that allows users to create and maintain WWW Home Pages through FIRNMAIL. This product also has plans to provide the ability to read and send FIRNMAIL via a user's web browser.

FIRN will maintain the Florida Collegiate Admissions Application system (the electronic admissions application) and will assist the colleges and universities in the dissemination of information about this system to high school guidance staff in all of Florida's school districts.

FIRN, in cooperation with the DOE's Education Data Center, will develop an on-line School Bus Warranty System for use by school district transportation offices. This system, to be managed by the DOE's School Transportation Office, will assist school districts in the filing and collection of warranty claims on school buses.

FIRN staff will work to support and assist educators as they plan, at the district level, for a network which will connect computer to computer, classroom to classroom, school buildings to the district office, and the district to the world via the Internet.

FIRN will continue to evaluate search engines and tools for enhanced dissemination of data through the WWW server. Software to be evaluated will include commercial as well as freeware available through the Internet.

By the end of the calendar year, many universities will migrate from their respective Internet Service Providers (ISP) to join FIRN. While saving hundreds of thousands of dollars annually, these FIRN connections will actually enhance the overall structure of Florida's educational connectivity. As Florida's Intranet becomes more complete, routers along the network will be able to get updates from each other (called peering) effectively resulting in an extremely fast educational network.

FIRN will assist the owners of the FIRN Resource Data Bases in the migration of their data bases to the World Wide Web.

In addition to this, translation technology will assist FIRN as migrations from one ISP to another occur. The use of this technology will enable sites to continue their service without interruption while different IP addresses are assigned from the new ISP.

FIRN will implement new standards for access by private educators and business partners which will provide for time-limited access to FIRN, FIRNMAIL, POPmail and PPP.

FIRN will continue the support of our POPmail service enabling users to create and read mail offline, thus providing more available access to FIRN dial-ups.

The implementation of a USENET news server is still being considered which will provide offerings that mirror group



conferencing in the FIRNMAIL system but will also allow for the creation of new groups by Florida teachers.

Data transfer, i.e. uploading/downloading of files from computer to computer, will continue to be facilitated through the use of FIRN's file transfer system, and via FTP to/from FIRN's anonymous file directory.

The next two years are critical for Florida's schools as PCS, LANs, WANs, intra/internets and new telephone company technology combine and begin to provide an astounding service platform which will provide effective

education for students. Without question, one of FIRN's most important goals during that time will be to provide districts and colleges with direction in making decisions about the extent and kind of network services they want to provide. Now, more than ever, education will use communication infrastructures to support new administrative initiatives to leverage their own staff efforts. Whether the topic is the migration from SNA to TCP/IP, the implementation of Frame Relay, or IP addressing issues, FIRN's coordination role can enhance an entire district/campus connection plan.

## FIRN's Strategic Plan

FIRN was originally presented to the Legislature as a network which would transport administrative data from school districts to the DOE in a more timely and efficient manner. Because of this, the Legislature has come to rely on FIRN as the solution for many problems dealing with computers, computer applications and telecommunications.

This portion of The FIRN Report highlights critical issues and technologies identified by FIRN that will contribute to educational technology goals in the coming years.

The primary goals which will continue to guide FIRN fall into three categories:

interoperability,  
integration, and  
instruction.

In recent years, FIRN has made significant progress in all three areas. FIRN plans to continue its efforts in these areas, as networking technologies improve.

### **I**nteroperability:

One of FIRN's goals is to improve the interoperability between the dissimilar computer systems throughout the FIRN network, as well as the interoperability between network services and the users of these services. In recent years, FIRN has taken advantage of the mechanisms which provide network utility services (interactive access, file transfer, e-mail interchange), making the functions less cumbersome and more efficient. FIRN plans to continue to identify and implement technologies which are superior from both an end-user perspective

and a resource utilization perspective. The following initiatives are means to this end.

Currently FIRN supports two types of computing/networking architectures:

- 1) SNA (Systems Network Architecture, IBM's proprietary networking technology), and
- 2) TCP/IP (Transmission Control Protocol/Internet Protocol).

TCP/IP technology solves the interoperability issues of past networking technologies. A good example is the standardization of file transfer mechanisms. Educational institutions that have chosen to use FIRN's TCP/IP technology, have found that the FTP (file transfer protocol) facility of TCP/IP enables them to exchange large data files with each other and with NWRDC (the DOE's data repository) more rapidly than ever before. FTP does not require that files have records of a fixed, restricted length (i.e. 80 characters) and uses a common command set across all platforms. In the future, FIRN will migrate SNA traffic to the TCP/IP backbone.

Maximize e-mail interchange. Both of the architectures supported by FIRN (SNA and TCP/IP) have a mechanism for e-mail transport (SNADS - SNA Distribution System, and SMTP - Simple Mail Transfer Protocol). E-Mail has become a strategic application for both administration and instruction. FIRN plans to improve e-mail interchange by supporting X.500 directory services and Lightweight Directory Access Protocol (LDAP).

The benefit of this strategy is that users will be able to use their local e-mail system (if there is one) to communicate with users around the

state and nation as opposed to having to interactively access FIRNMAIL. The development of a statewide email directory will enable users to more easily locate colleagues across the state.

### **I**ntegration:

During much of the 70's and 80's, strategies for networking host computers of different architectures were largely limited to implementing separate physical networks. This was due to the lack of interoperable hardware and software - each vendor offered only proprietary networking technology.

FIRN, like other network service providers, found it necessary to implement distinct computer networks in order to support the broad range of networking services required by their patrons. Over the years, FIRN has had to implement/interface with three statewide networks to serve school districts, community colleges, state universities and the DOE. This expense, duplication of effort, and network management burden created a tremendous marketplace for networking hardware and software.

In the past few years, new options have developed allowing networks to become more integrated. None of these new technologies has had a more dramatic impact than the acceptance of non-proprietary "standards." FIRN implemented the "open standard" TCP/IP technology in 1995, but the real effort now involves migrating school districts, community colleges, and the state universities to fully embrace TCP/IP for both administration and instruction. As stated in the interoperability section, FIRN plans to migrate SNA traffic to the TCP/IP backbone.

The most visible service improvement has been the deployment of many new additional

high-speed modems. Using the higher connection speeds, educators can now access information such as nationwide district technology planning documents as part of the overall Internet information base. By the end of the 1996-97 fiscal year, FIRN will increase its statewide modem pool by approximately 50 percent.

As the districts, community colleges and universities strive to implement TCP/IP systems, Florida's educational networking infrastructure will offer the administrative and instructional services envisioned by legislative and educational leaders. The recent strategic initiatives involving legislative funding for technology, combined with the open standards based networking of TCP/IP, already provide Florida's students and teachers with the tools that can make learning more effective. As more and more of the existing educational networking infrastructures migrate steadily toward non-proprietary systems, educational strategies will be even more cost effective and successful.

### **I**nstruction:

For many years, FIRN's SNA network primarily served as an administrative network. District survey transmissions, FASTER exchanges, access to the Teacher Certification system and similar administrative activities comprised the majority of the use on this network. FIRN's TCP/IP (Internet Protocol) network infrastructure is broader in scope, supporting research and instruction as well as administrative use. A growing number of students and teachers use FIRN to access Web Servers, FIRNMAIL, library services and the instructional resources of the Internet. In fact, today, FIRN patrons can use FIRN to access the combined holdings of all K-12 SunLink participants, the university and community college libraries as well as the State Library.

As the network focuses on the educational needs of its users, as well as their administrative needs, FIRN is investigating ways to more readily provide network applications for classroom use. School districts and community colleges will determine to what extent they will have individual schools or programs access the network, but FIRN will assist with ways in which this task can be accomplished.

FIRN has made enormous strides in the support of instruction at the K-12 level. Several instructional applications have been implemented and licensed services, including Britannica Online and American Cybercasting Corp, have been purchased. Although these applications are noteworthy, it should be remembered that no matter how many instructional applications are implemented, it can never be an all inclusive effort as there will always be far more instructional applications available at the national level. With the addition of FIRN's World Wide Web server, and PPP access, FIRN patrons no longer are limited to what "FIRN" selects for inclusion on menus. Users can now "surf" to most any site and determine what best suits their own personal/classroom needs.

With this in mind, it is important to note that FIRN has a "FIRN Access Policy" which is enforced with each user account. District and community college administrative offices have been made aware of this policy and we encourage each site to establish their own Internet access policies or guidelines. FIRN will continue to provide networking services which will make instructional resources available to teachers and students throughout Florida, but will also keep their best interests in mind. In the future, firewalls will be set up at each of FIRN's Internet Gateways that will block access to objectionable material.

Providing such firewalls at the state level will save schools and districts considerable resources and funding.

It is important for FIRN to pilot projects which enhance learning and classroom instruction as the network begins to carry significant quantities of instructional information to schools and individual classrooms. Useful instructional applications provide savings in cost and time, while others provide a central distribution point for updates, or provide access to content experts that are in short supply. As a result, the investment in the existing network will be maximized.

FIRN believes that by focusing its efforts on interoperability, integration and instruction, it will be able to provide improved performance, utility and useability, and will make a more efficient use of a multitude of computing and telecommunications resources. The integration plan will reduce the cost of providing networking services and thus enable the investments necessary to improve the performance and the capacity of the remaining networks, as well as simplify the task of network management. Finally, the goal of FIRN's instructional plan is to provide appropriate support for all three of the major activities of Florida's educational institutions: administration, research and instruction.

### **Directory Services:**

Electronic mail and web servers have proliferated the Internet. Their value has become a critical, strategic application for teachers, students and administrators. However, it has become extremely difficult to integrate various application servers in a seamless and simple process through the network.

FIRN plans to implement a Network Directory Service (NDS). Directory services are repositories of information about objects on the network, no matter whether they are servers, users, groups of users with associated rights, files, or peripherals. Directories ease the management of networks, acting simply as a traffic cop or switchboard operator that knows where everything is, associating specific, easy-to-remember names with network addresses.

Directory services make it easier to find users and systems when logging on, sending e-mail, and using other network applications. They are especially attractive because they offer an easy way for client-server systems to find and connect to the network resources they require to function across a large enterprise network, such as FIRN.

### **T**elecommunications Deregulation:

In the past year, both state and federal governments have passed telecommunications deregulation bills. Now, a year after deregulation, we already have opportunities to partner with some of the new advanced telecommunications providers. In the future, there will be many more opportunities.

Recently, FIRN established a partnership with Comcast Cable in Leon County. Through our partnership, local institutions are able to have high-speed connectivity (10Mbps) at a very reasonable cost. For a subscription fee, Comcast Cable has indicated they will begin offering premium high-speed connectivity via cable modems in 1997. Because of the partnership with FIRN, FIRN eligible Comcast Cable patrons can receive this premium high-speed access to FIRN and the Internet from home at a reduced fee.

In the future, FIRN will develop partnerships

with other advanced telecommunications providers. The goal will be to provide educational entities with the best possible solution to their site's particular telecommunications needs.

### **U**niversal Access:

On November 7, 1996, the FCC's Federal-State Joint Board on Universal Service adopted recommendations to implement "affordable telecommunications access provisions for schools and libraries" (i.e., Section 254 of the Telecommunications Act of 1996).

"The Joint Board recommends that eligible schools and libraries be able to purchase, at a discount, any telecommunications services, internal connections among classrooms, and access to the Internet. The Joint Board recommends providing higher discounts for economically disadvantaged schools and libraries and those entities located in high cost areas. Discounts are a minimum of 20% and range from 40-90% for all but the least disadvantaged schools and libraries. Total expenditures for universal service support for schools and libraries is capped at \$2.25 billion per year, although any funds not disbursed in a given year may be carried forward and also disbursed."

The basis of wealth is a topic upon which additional public comment will be solicited between now and May 8, 1997, when the FCC is required to have made its final implementation rules on the issue of affordable access for schools and libraries under the Telecommunications Act of 1996. It appears that this long awaited statement will ensure that America's schools and libraries will have affordable access to needed telecommunications technologies.

This pending legislation demonstrates the value of having a "state educational infrastructure," such as FIRN. Through FIRN, Florida will be in a position to take full advantage of the Universal Access legislation. Additionally, FIRN is in the best position to support schools and libraries during this transition period.

### **Educational Intranet:**

The value of the Internet as an educational resource is just beginning to develop. In the future, we will see curriculum developed using TCP/IP and HTTP standards based on Web technology, making the Internet a curriculum rich resource. However, the Internet has not been able to keep up the exponential growth of Internet users. The Internet is already experiencing packet loss and response time problems. In the future FIRN will best support its students and teachers by functioning as an Intranet. Access to the Internet will still be available but curriculum applications will be supported by FIRN's Intranet.

This strategy is now being deployed by business and industry. In simple terms, the Intranet is the descriptive term being used for the implementation of Internet technologies within an organization, rather than for external connection to the global Internet. This implementation is performed in such a way as to transparently deliver the immense informational resources of an organization to each individual's desktop with minimal cost, time and effort. These private Nets, or "Intranets," use the infrastructure and standards of the Internet and the World Wide Web, but are partitioned off from the public Internet through software programs known as "firewalls." Employees can venture out onto the Net, but unauthorized users cannot come in.

The concept of the Intranet supports FIRN's statewide infrastructure as a "private" educational network. Educational Intranets will become necessary to support curriculum products developed by text book publishers. In theory, students and teachers would have access to licensed educational materials through the FIRN Intranet.

### **Wireless Technology:**

FIRN has successfully integrated wireless networking within a Local Area Network. Our successful implementation has provided districts, community colleges and universities with technical information and support so they can make informed decisions about this technology. Improvements in wireless technology continues to make the technology a strategic solution. FIRN plans to integrate wireless networking into part of its technology plan within a small rural school district. In concept, wireless technology should provide a viable solution for any school within a 30 mile radius from the district hub connection.

### **Distance Learning:**

As a telecommunications provider for education, FIRN supports distance learning which uses many different forms of technology. Hospital/Homebound programs in many school districts, as well as college and university professors, use FIRN to support distance learning programs. These include, but are not limited to: offering college courses, communicating with peers in the classroom, receiving and submitting classwork/homework assignments, and conducting research for term papers.

FIRN will actively participate with the Florida Distance Learning Network (FDLN) to support the coordination of distance learning statewide. FIRN's network infrastructure is

positioned to support the data connectivity requirements for all eligible institutions.

FIRN will continue to investigate applications which allow teachers to use the network to enhance classroom curricula and develop global classroom usage. Networked instructional applications are available evenings or weekends, and include applications that build proficiency or offer remediation. The network can provide the means of accessing the instructional applications from remote locations throughout the state.

FIRN will continue to support both low and high-end equipment. Business and industry regularly upgrade hardware and software. On the other hand, schools keep machines "for life," so it is critical to support the various platform levels. For example, FIRN provides Web access, normally reserved for high-end machines, to all levels of equipment. This allows schools to leverage their investment, so students can access web based applications on old equipment.

### **S**upport and Training:

Support and training has become one of our most critical areas. Through FIRN, networking technology is literally at the fingertips of every educator in Florida. Over 50,000 educators use the network on a regular basis. Over a thousand new accounts are created every month. Providing quality support and training has become a critical

goal. FIRN's Helpdesk operates from 8 a.m. - 11 p.m. on weekdays and 9 a.m. - 6 p.m. on weekends. The ten FIRN Technical Education Consultants (FIRNTEC's) that are housed in districts, colleges and universities around the state are strategically located to provide the best quality training available. FIRN will continue its commitment to provide quality training and support.

### **E**ducation Consortia:

FIRN recognizes the value in our educational consortia. For years, FIRN has supported each of them at various levels, providing funding for positions, training labs, equipment and network connectivity. FIRN plans to continue supporting the Northeast Florida Education Consortium, the Panhandle Area Educational Consortium, the Gateway Consortium, the AS/400 Consortium, and the Heartland Consortium. Each of these consortia play a vital role, particularly in support of small and medium sized school districts.

That same value is recognized for each of the community college consortia. Three years ago, legislation encouraged the community colleges to develop system level consortia. There were two active consortia prior to the legislation and FIRN, over the years, provided support that was consistent with the FIRN mission. In the future, FIRN plans to extend support to new consortia that were created since the legislation.